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DeLorean Club of Oregon News & Information



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Forest Grove Concourse by Knut Grimsrud

You may have noticed that an issue of the DeCO newsletter was missed this summer. Despite the impression this may give, there has been a lot of local and national DeLorean activity over the summer months. Between building my new home and handling various other responsibilities I've been spread a little thin lately which accounts for the lack of communication over the last several months.



Although the Forest Grove Concourse had no DeLoreans on display, there was no shortage of outstanding cars on display.

As I mentioned, there has actually been a lot of local and national activity over the summer months. Nationally, the annual DeLorean Expo



This year added a new hot-rod category to the Forest Grove Concourse.

sponsored by the DeLorean Owners Association was held in St. Louis this year with a good showing (especially from the highly active midwest DeLorean regional clubs). This was an excellent opportunity to meet many of the



There was plenty of chrome and shine.

prominent figures in the DeLorean community including the proprietors of the major DeLorean parts and service centers nationwide as well as many of the folks that are active in the DeLorean internet community. In addition to enjoying the various organized social events that ranged from a tour of the wine districts, to a riverboat cruise, and dinner at the arch, I had the opportunity to participate in judging the Millenium Concours sponsored by DeLorean Motor Company. This was a very rewarding experience and one I will cover in a separate write-up. I don't expect my next newsletter will take me quite as long to write and publish as this one.

The annual All British Field Meet was another local event that I had the pleasure of participating in again this year. This event does welcome DeLoreans, although we no longer have a separate class (we can have our own class if we have sufficient cars represented). The field meet caters to all British cars and usually sees some outstanding examples of historic and rare automobiles. Additionally, the meet has a relaxed atmosphere that is very conducive to mingling and approaching the various owners. I particularly enjoy talking with the various owners about areas of common interest and have found over the last several years that the event has a lot of regulars that make for interesting discussion and for an opportunity to watch the progress many restorers and enthusiasts make over time.



Grad Night Party

by Dave Price

Back in April I was asked to display my car at a Newport High School's upcoming graduation party. The theme for the party's entrance area was "Back to the Future" and they wanted a DeLorean on hand to add some realism to the mock-up of the clock tower they had constructed. Having a few weeks to plan, I began construction of a Flux Capacitor and Hoverboard to accompany my DeLorean. The props turned out wonderfully and I even got a

chance to demo the Flux Capacitor at the All-British Car Show in Northern California.

The party started at about 1am on June 12th. I found my way to the school where the party was at and parked my car in front of the entrance alongside a VW bus (similar to the one the terrorists drove in the first movie). I was in full "Marty McFly" costume with my orange vest and wrap-around sunglasses. Unfortunately I was unprepared for the cold salt-air at the coast and the stainless had a wet haze that wouldn't wipe off without cleaner (me without my Windex!). However, the seniors that arrived didn't seem to care at all, as they swarmed around the DeLorean in a way I have never seen before! There were guys and gals surrounding every inch around the car, three or four people deep! All of them just wanting to catch a glimpse or touch the stainless. After they all shuffled inside to the party, there was a steady flow of students and organizers with cameras in hand taking pictures of me and my car (I guess my costume was convincing!). There were lots of questions from everyone there, and I did my best to spread the truth about our cars. Maybe I have prevented another generation of false information? Well, maybe not, but at least a handful of folks in Newport know DeLoreans weren't made by "GMC" and don't have helicopter engines.

It was a great time and I encourage anyone who has the chance to show their cars in unusual settings, as they may yield the greatest interest! Just remember: Always have a roll of paper towels and Windex somewhere in your car!

Editor's note: On occasion opportunities present themselves that seem to catch my attention as worthwhile ventures. In this case, the Newport event was part of alternative grad night festivities sponsored by concerned parents in the area with a long and respected history for providing an alternative to some of the less wholesome events typical for graduation night. I believe that local merchants also kicked in and that Dave received a complimentary hotel package for his troubles. Thanks to Dave for his efforts in developing a good DeLorean image in the community.



Tech Notes

The number of DeLoreans actually produced has been under some dispute as the anecdotal information does not seem to align well with the commonly reported production figure of 8583. Although this figure seems to be reported by several different sources, the origins of this figure are not clear and I have been unsuccessful in attempting to track down the origins of the figure. In an attempt to determine whether the commonly reported production figure does indeed accurately represent the actual production volume, I have been undertaking a statistical study for some time. This issue's tech notes examines the results of this ongoing study.

DeLorean Production Chronology

by Knut Grimsrud

The production chronology analysis is based on the DeLorean Owners Directory (DOD) information as well as additional VIN information that has been obtained from DMC records and other sources. The analysis attempts to address some of the long outstanding questions regarding the number of cars manufactured as well as the production rate of vehicles over the history of DMC production and the mix of production options (interior color and transmission) during that time.

Analysis of the survey data is in large part based on the well-known central limit theorem. This theorem states that if the observations in a sample are independent and come from the same population that has a mean of μ and standard deviation of σ , then the sample mean for large samples is approximately normally distributed with mean μ and standard deviation σ/\sqrt{n} . In English, if the cars with various VINs are randomly distributed among those that provided data to the survey, then the survey data can be used to estimate the characteristics of the entire population (in this case the entire vehicle production run). The survey data meets this requirement well (with a couple exceptions reported later), so we can apply classical statistical methods to analyzing the data. Note that in order for the data to meet this requirement of randomness, some of the analysis relies solely on the survey information and not on the obtained records, since those records cover VINs that are not randomly distributed. This accommodation is required in order to preserve the statistical accuracy of the

analysis. In other cases, the DMC records data can be used to more accurately determine historical build rates and options mixes as appropriate.

It is important to recognize that statistics is not an exact science, hence it is a misnomer to report a computed average (mean) value, for example, without also indicating its confidence interval. A confidence interval is a range over which the computed statistic will be with a certain degree of statistical confidence (90% confidence is used for the calculations here). Even with modest sample sizes, the confidence intervals for many calculations can be quite narrow indicating that the computed value has a high likelihood of being close to the actual value. In some cases (as will be seen later), there is little confidence in a computed value as the confidence interval for the value may be larger than the value itself. Such cases require more data in order to be adequately resolved.

Using the survey data and by making some additional assumptions when taking the build date from the VIN plate into account, the rate at which the cars were produced and the total number of cars manufactured can be estimated. The following figure indicates the estimated number of cars assembled each month during the DMC-12 production period broken down by build options (interior color and transmission type). The following assumptions were made for the estimate:

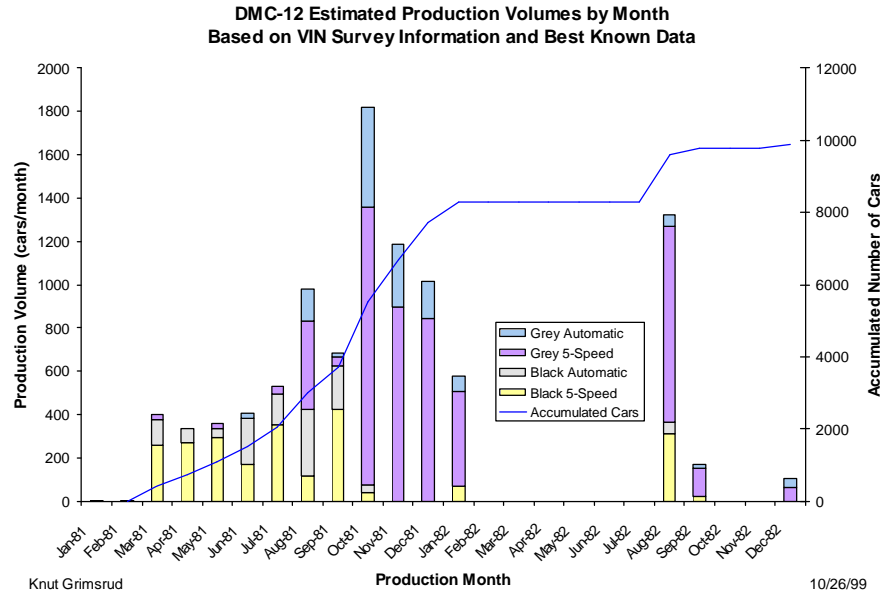
- There are no skips in the VINs except between series (between 81's and 82's, between 15000 and 16000 series, between 16000 and 17000 series, and between 17000 and 20000 series). Although several people

have indicated there are skips in the VINs (especially for the 83's) no hard data on this is available, so no assumption on skips is made for the graph. This assumption will be scrutinized later.

- Cars were manufactured at a constant rate from the last car manufactured in one month (as indicated by the survey data) to the first car manufactured in the next. Although this assumption is poor, it is the best that can reasonably be made. Also, with the number of cars represented in the survey data, there were very few from the end of one month to the beginning of the next not included in the survey results, so the introduced error is relatively small. Finally, this assumption has no effect on the estimate on total number of cars manufactured, only on when they were manufactured.
- VIN number 12174 is an outlier and represents a sample outside the regular population.

As indicated in the graph, production started relatively slowly and then increased sharply toward the fall of 1981 before tapering off toward the end of 1981. Temporary plant closures and re-starts are evident by the periods in which no cars were produced. Note that the data is based on the build month indicated on the VIN plates and there may have been occasions where the VIN plates were attached to the assembled cars at some time later than the day they rolled off the end of the assembly line. This may be the case for the August 1982 cars since the volume is so high after such a long period of apparent plant shutdown.

The changing trend in build options can also clearly be seen in the historical trend. For the first part of 1981, cars were manufactured primarily with black interiors, while from



October through January production changed to almost exclusively gray interiors. Later cars were manufactured almost entirely with manual transmissions, while cars manufactured in the early fall of '81 were closer to an even mix of 5-speed and automatic transmissions.

From the raw data, the number of cars manufactured can be estimated at 6700 model 81's (including the first 60 which may be considered pre-production cars since DMC memos indicate warranty service was not recognized for them), 1594 model 82's, and 1572 model 83's. The number of 81 cars agrees with the number cited in a DeLorean Motor Company memo to dealers requesting warranty service on all 81 model cars, the 82 figure is fairly close to the commonly accepted value, while the 83 figure is substantially higher than that commonly accepted.

From the survey data, the distribution of various model years can be calculated as:

| | |
|----------|-----------------|
| Model 81 | 74.8% $\pm 3\%$ |
| Model 82 | 12.7% $\pm 2\%$ |
| Model 83 | 12.5% $\pm 2\%$ |

The distribution of the various combinations of options (interior color and transmission) is summarized for each model year in the following table.

Note that the survey results indicating that the number of 82s and 83s manufactured is roughly equal is required to refine the production estimates presented in the figure since the

| '81 | Black | Gray | Black or Gray |
|---------------|-----------------|-----------------|----------------|
| Automatic | 16.5% \pm 3% | 13.5% \pm 3% | 32.1% \pm 4% |
| 5-Speed | 30.5% \pm 4% | 39.6% \pm 4% | 67.9% \pm 4% |
| Auto or 5-spd | 46.6% \pm 4% | 53.4% \pm 4% | |
| '82 | Black | Gray | Black or Gray |
| Automatic | 0.0%* | 16.7% \pm 8%* | 25.7% \pm 8% |
| 5-Speed | 4.5% \pm 4%* | 78.8% \pm 8% | 74.3% \pm 8% |
| Auto or 5-spd | 4.5% \pm 4%* | 95.5% \pm 4% | |
| '83 | Black | Gray | Black or Gray |
| Automatic | 3.2% \pm 4%* | 4.8% \pm 4%* | 13.9% \pm 7% |
| 5-Speed | 20.6% \pm 8%* | 71.4% \pm 9% | 86.1% \pm 7% |
| Auto or 5-spd | 23.4% \pm 9%* | 76.6% \pm 9% | |

*Insufficient data for statistical significance at 90% confidence

I have broken out the various option combinations from their individual options. For example, there were 46.6% cars with black interiors made in '81 and there were 67.9% with 5-speed transmissions, but only 30.5% had both a 5-speed and black interior. Similarly, in '81 there were more black automatics than gray automatics, but there were more gray 5-speeds than black ones – hence automatics were predominantly black and 5-speeds were predominantly gray. Interestingly, the survey data has no black '82 model automatics.

Using the estimated production distribution of 74.8% of cars being model 81's and the generally accepted figure that there were 6700 model '81s manufactured, one can estimate the total production run of the car to be 8954 ± 270 with a statistical certainty of 90% (meaning there is a 90% probability that the number of cars manufactured was between 8684 and 9224). Also, since the number of survey results for model 82's and model 83's is nearly identical, one can also draw the conclusion that there were essentially the same number of model 82's manufactured as model 83's. Combining this additional piece of information and the assumption that model 82's do not have skips in the VINs, the estimated number of cars manufactured becomes approximately 9866.

Message from your Coordinator

Despite the apparent lack of activity based on the long duration between newsletters, the DeLorean Club or Oregon has seen lot of activity over the past summer. Due to the pressures of work and the landscaping around our new home, I have not had the resources to keep everyone abreast as well as I could have. Now that the winter months are setting in and the landscaping is starting to come around, I'm looking forward to things returning to a more normal pace.

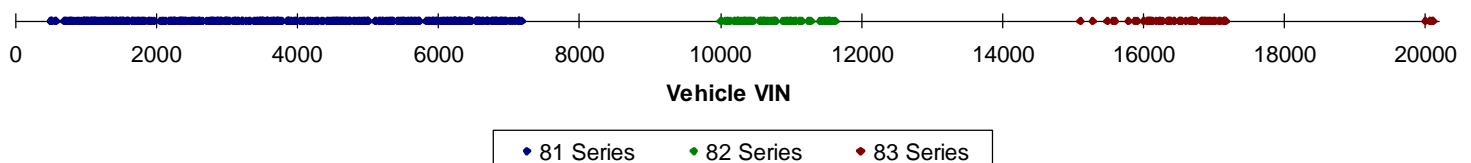
In transitioning to my new home and in meeting the responsibilities at work, I have realized that I'm not in a position to provide the same level of attention to the club that I once did when I had few other responsibilities. If you find the club a valuable asset and would like to see it continue with the same level of involvement as before, I ask that you consider contributing to the club by helping with some of the event selection and planning. Please contact me directly if you are in a position to help with local events planning.

analysis was based on the assumption that no VIN numbers were skipped which we will see later may not be entirely sound. The graphed production rates in the figure and volumes take the additional factor of the number of 82s and 83s being roughly equivalent to further refine the estimates.

There are a couple known factors that affect the accuracy of the computed values resulting in the above discrepancies. These factors would indicate that the actual number of cars may be slightly higher than that reported. The assumption with the central limit theorem upon which all this calculation is based is that the reported cars have randomly distributed VIN numbers. Because of the way the data was collected, this may not be entirely true: many low VIN cars reported in the survey were not reported by their random owners, but were sought out in the various museums and historical records. Since the low VIN number cars are primarily featured in these circles, the '81 models have likely been slightly over-

One interesting note from this study is that common statistical techniques indicate that the generally accepted number of 8583 cars manufactured does not fall within the confidence interval for the analysis of the survey data. I have thus far seen no source documenting the origin of the 8583 number and it is unclear what the origins of this estimate is – however, based on the survey data thus far it does not appear to be an accurate estimate.

There has been a lot of speculation on whether there were skips in the VIN series during the '82 and '83 model year production. The following graph shows the distribution of VIN numbers from the sample data across the VIN range. Although not a sound metric, the sample density for the 82's and 83's visually appear more sparse than the 81 samples, indicating there may be a possibility that either there are indeed skips in the VINs or that the sample distribution for the 82's and 83's is for some reason more sparse than the 81's.

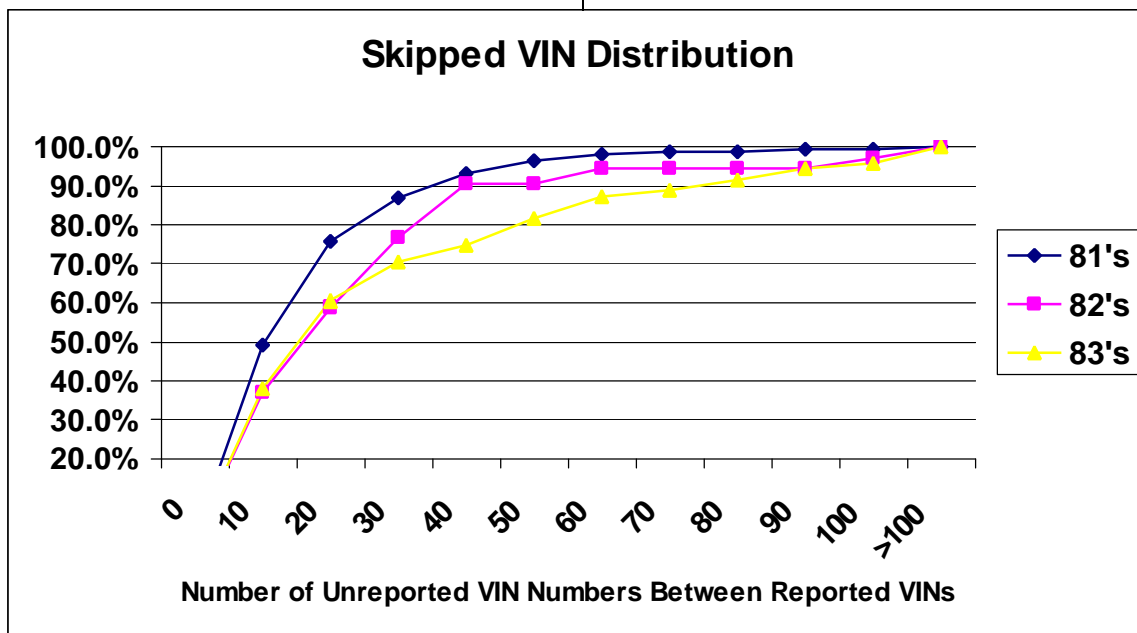


reported. The result on the calculation is that the actual ratio of '81 model cars will be slightly lower than the calculated ratio from the survey results since the '81 samples have been over-represented slightly. If the actual proportion of '81 model cars is slightly lower, then the total number of cars produced would have to be slightly higher than that calculated. A previous calculation I did using a more randomly distributed sample data (included reported survey data from owners exclusively) concluded there were about 10,000 vehicles manufactured and this data collaborates that assumption.

The number of samples in the survey data allows estimation of the likelihood that VIN numbers were skipped in the 82 and 83 production runs. Keep in mind that the estimated skips in VIN numbers can either be due to actual skips in the VIN numbers or can be due to a difference in the distribution of reported VIN numbers. In order to get a handle on whether there were likely skips in the VINs, I tabulated the distribution of distances between the reported VIN numbers. If the reported VIN numbers are random samples in the population and the VINs have no skips, then the distribution between the reported VIN numbers in the survey approaches a predictable

distribution (i.e. if the survey represents about 10% of all the cars in the population, then one would expect that on average there would be about 10 unreported VIN numbers between the reported VIN numbers – having two reported VIN numbers separated by a large number of unreported numbers becomes unlikely). The following figure represents the cumulative

samples with a larger number of unreported intervening VIN numbers as manifest by the curve lying below the 81 curve. To illustrate, for the 81 samples, 95% of the reported VINs had 50 or fewer unreported VIN numbers between them (conversely, 5% had more than 50 unreported VIN numbers between them), while for the 83 samples, only 80% of the reported



density function for the distribution of distances between adjacent reported VIN numbers for the three model years.

From the distributions, the predictable distribution of unreported VIN numbers is clear for the '81 production series (the distributions are sensitive to the number of samples, and the '81 sample size was by far the largest, thereby also producing the best distribution). The degree to which the 82 and 83 series does not match the 81 distribution is either due to the smaller sample sizes for those populations or due to skips in the production VIN numbers. The 82 series is reasonably close to the 81 distribution and with less than ¼ as many samples for the 82 series as the 81s, the distribution may be within the margin or error for the sample size. The 83 series, however has the same number of samples as the 82 series by has additional substantial discrepancies in the distribution. The 83 distribution generally has

samples had 50 or fewer VIN numbers between them (conversely 20% had more than 50 unreported VIN numbers between them). This data supports the theory that there were VIN numbers skipped in the 83 production series.

With a little additional projection, the number of VIN numbers skipped in the series can also be estimated. I'll approach that analysis in the next update of the production chronology analysis. This information has been analyzed as a courtesy by Knut Grimsrud of the DeLorean Club of Oregon. No claims of the cosmic nature of this data is made nor is any claim made as to my fallibility. If you see areas where the analysis falls short or have suggestions for other statistically sound techniques, feel free to let me know.



Member Profile: Dave Price

Name: Dave Price
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I have been a huge fan of the DeLorean ever since it's appearance on the first "Back to the Future" movie. It was just a fantastic movie prop until a couple years later I learned that it was derived from a real car! At age 10 it became a dream of mine to own one of these stainless beauties, and at age 21 that dream became a reality.

My '83 DeLorean has a gray interior and an automatic transmission. It's my daily driver, but working from home it sees the garage more than the road. I enjoy working on my 'D' and building replacement parts to give it a more "modern" look. I'm always interested in getting together with fans or owners to share experiences.



Dave proudly displaying his 2nd prize trophy.

Editor's note: Dave is an enthusiastic member and skilled hacker in Eugene. He has made numerous updates to his DMC that give it more of a futuristic aura that are best seen rather than described.

For Sale & Wanted

Advertisement of DeLorean related items and services is provided as a service to club members free of charge.

Commercial advertisements available at negotiated rates.



Foreign Car

SPECIALISTS

Parts & Service

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Owner/Operator

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